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09/985,683	11/05/2001	Lawrence Hui	0023-0032	4018

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HARRITY & SNYDER, LLP
11240 WAPLES MILL ROAD
SUITE 300
FAIRFAX, VA 22030

EXAMINER	
LE, TRAN Q	
ART UNIT	**PAPER NUMBER**
2633	

DATE MAILED: 03/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/985,683	HUI ET AL.	
	Examiner	Art Unit	
	Tran Q. Le	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 November 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5-14 and 17-27* is/are rejected.

7)☒ Claim(s) *3,4,15 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 14 recites the limitation "fabric request controller" in p. 20. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 5-7, 18-22 are rejected under 35 U.S.C. 102(e) as being anticipated by McKeown et al. (US Patent No. 6,647,019).

Regarding claim 1, McKeown discloses a network (fig. 3) comprising:

a credit counter (col. 14, lines 4-8) configured to store a value indicating an amount of data eligible to be transmitted from the network device (fig. 7 and col. 14, lines 4-13),

a request component (330a, fig. 5) configured to generate requests (LCS-2 request data cell) to send data (col. 13, lines 18-21) and to receive

corresponding grants in response to the requests (col. 13, lines 43-47), the request component decrementing the credit counter when the requests are generated (col. 14, lines 13-16) and incrementing the credit counter when grants are received (col. 14, lines 21-24), and

a fake request circuit configured to generate fake requests (col. 15, lines 18-26, i.e. LCS-2 request(control) cell), the fake requests causing grants to be returned to the request component (col. 15, lines 60-67).

Regarding claim 5, McKeown discloses a grant pending queue (340a, fig. 5) for receiving data to be transmitted and notifying the request component of the arrival of the received data (col. 13, lines 33-47), the request component permitting the grant pending queue to transmit the received data to the switching fabric based on the received grants (fig. 5 and col. 14, lines 51-54).

Regarding claim 6, McKeown discloses the request component delays sending the requests when the credit counter is below a minimum value (col. 14, lines 25-28).

Regarding claim 7, McKeown discloses the request component does not increase the credit counter beyond a predetermined maximum value (col. 14, lines 8-13).

Regarding claim 18, McKeown discloses a method of metering data flow to a network (fig. 5) comprising:

receiving at least one data unit for transmission on the network (col. 11, lines 39-43),

generating a request (LCS-2 request data cell) to transmit the data unit (col. 13, lines 12-21) when a credit counter contains sufficient credits for the data unit (col. 14, lines 25-28);

decrementing the credit counter (request counter) in response to generating the request to transmit the data unit (col.14, lines 13-16),

receiving grant messages (grant cell) from the network that correspond to the transmitted requests, the grant messages indicating that the data unit may be transmitted on the network (col. 13, lines 43-47);

incrementing the credit counter (request counter) in response to receiving the grant messages (col. 14, lines 21-24); and

periodically generating a fake request (periodic LCS-2 request (control) cell) that does not correspond to a data unit (col. 15, lines 18-26), the fake request causing grant messages to be received from the network and the credit counter to be incremented in response thereto (col. 15, lines 60-67).

Regarding claim 19, McKeown discloses the network is a switch fabric (350, fig. 5).

Regarding claim 20, McKeown teaches the fake requests are generated at a rate based on a rate of data loss of the network (col. 15, lines 18-29).

Regarding claim 21, McKeown teaches when the credit counter does not contain sufficient credits for the data cell, generation of the request to transmit the data unit is delayed until the credit counter has a value above a predetermined value (col. 14, lines 25-28).

Regarding claim 22, McKeown discloses generating the fake request at predetermined times corresponding to a value stored in a user programmable register (col. 15, lines 18-49, periodic generation of request (control) cell indicates a predetermined time determined by a user programmable register).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 8-13, 17 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKeown et al. (US Patent No. 6,647,019) in view of Angle et al. (6,477,169).

Regarding claims 8 and 25, McKeown discloses a request controller for metering data flow to a network, the request controller comprising:

a real request component (330a, fig. 5) configured to generate request messages (LCS-2 request data cell) corresponding to data that is to be transmitted to the network (col. 13, lines 18-21) and to receive back grant messages (grant cell) indicating that the data can be transmitted to the network (col. 13, lines 43-47), and

a fake request component configured to periodically generate a fake request message (periodic LCS-2 request (control) cell) to a destination on the network

determined by a value in a pointer register (col. 15, lines 26-49, note that the time elapse between the linecard 330a transmitting the LCS-2 control cells and port module 340a receiving and processing the LCS-2 control packet indicates that there must be a pointer register keeping track of how frequent the control cells are generated).

McKeown differs from the claimed invention in that he fails to teach the real request and fake request are of vector forms, and he does not further indicate the pointer register being incremented after each fake request message is generated.

However, Angle, in the same field of endeavor, teaches transmitted requests sent to a switch fabric in the form of request vectors (fig. 1-2 and p. 4, par. 0047).

Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use the request vectors form such as the ones of Angle in the request controller of McKeown for the real and fake requests in order to identify which of the possible destinations each request should be routed.

Moreover, it is obvious for one ordinary skill in the art to utilize a pointer register with incrementing count rather than a decrementing count in order to point to the next location in the fake vector (control cell) register.

Regarding claim 9, McKeown discloses the network is a switching fabric (350, fig. 5).

Regarding claim 10, McKeown discloses the fake request component generates the fake request messages at intervals determined by a user programmable register (col. 15, lines 18-46, periodic generation of request (control) cell obviously indicates a

predetermined time determined by a user programmable register), but fails to teach the fake request is in the vector form.

However, Angle, in the same field of endeavor, teaches transmitted requests sent to a switch fabric in the form of request vectors (fig. 1-2 and p. 4, par. 0047).

Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use the request vectors form such as the ones of Angle in the request controller of McKeown for the fake requests in order to identify which of the possible destinations each fake request should be routed.

Regarding claim 11, McKeown discloses the real request component generates request messages corresponding to data cells that are to be transmitted to the switch fabric (col. 13, lines18-21), but fails to teach the real request component is in the vector form.

However, Angle, in the same field of endeavor, teaches transmitted requests sent to a switch fabric in the form of request vectors (fig. 1-2 and p. 4, par. 0047).

Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use the request vectors form such as the ones of Angle in the request controller of McKeown for the real request component in order to identify which of the possible destinations each real request should be routed.

Regarding claim 12, McKeown discloses the real request component further comprises:

a credit counter (request vector) that is decremented by the real request component when the real request component generates a request message (col. 14,

lines 13-16) and increment by the real request component when the real request component receives a grant message (col. 14, lines 21-24).

McKeown differs from the claimed invention in that he does not disclose the real request component is in the vector form.

However, Angle, in the same field of endeavor, teaches transmitted requests sent to a switch fabric in the form of request vectors (fig. 1-2 and p. 4, par. 0047).

Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use the request vector form such as the ones of Angle in the request controller of McKeown for the real request in order to identify which of the possible destinations each request should be routed.

Regarding claim 13, McKeown discloses the real request component delays generation of request messages when the credit counter (request counter) is below a predetermined value (col. 14, lines 25-28), but fails to teach the real request component is in the vector form.

However, Angle, in the same field of endeavor, teaches transmitted requests sent to a switch fabric in the form of request vectors (fig. 1-2 and p. 4, par. 0047).

Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use the request vector form such as the ones of Angle in the request controller of McKeown for the real request in order to identify which of the possible destinations each request should be routed.

Regarding claim 17, McKeown discloses the fake request is generated at a rate based on a rate of loss of the network (col. 15, lines 18-29), but fails to teach the fake request is in the form of fake request vector.

However, Angle, in the same field of endeavor, teaches transmitted requests sent to a switch fabric in the form of request vectors (fig. 1-2 and p. 4, par. 0047).

Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use the request vectors form such as the ones of Angle in the request controller of McKeown for the fake requests in order to identify which of the possible destinations each request should be routed.

6. Claims 2 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKeown et al. (US Patent No. 6,647,019) in view of Chao (6,487,213).

Regarding claims 2 and 23, McKeown discloses the request component and the fake request circuit (see rejection of claim 1), but fails to teach an arbiter connected to the request component and to the fake request circuit, the arbiter combining the requests from the request component and the fake request circuit and transmitting the combined requests.

However, Chao, in the same field of endeavor, teaches an arbiter (AR-q 1, fig. 11) combining the requests (arrow inputs of AR-q 1 on left) and transmitting the combined requests (Rg, fig. 11, abstract and col. 15, line 39-62).

Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use an arbiter such as the one of Chao in the system of

McKeown in order to reduce the traffic congestion of requests outputting into the network.

7. Claims 14, 24, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKeown et al. (US Patent No. 6,647,019) in view of Angle et al. (US Patent No. 6,477,169), and in further view of Chao (6,487,213).

Regarding claim 14, McKeown discloses the real request component and the fake request component (see rejection of claim 1), but fails to teach the real request component and the fake request component are of vector form, and the arbiter connected to the real request vector component and to the fake request vector component combines the request messages from the real request vector component and the fake vector component and transmitting the combined requests to the network.

However, Angle, in the same field of endeavor, teaches transmitted requests sent to a switch fabric in the form of request vectors (fig. 1-2 and p. 4, par. 0047).

Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use the request vectors form such as the ones of Angle in the request controller of McKeown for the real and fake requests in order to identify which of the possible destinations each request should be routed.

Moreover, Chao teaches an arbiter (AR-q 1, fig. 11) combining the requests (arrow inputs of AR-q 1 on left) and transmitting the combined requests (Rg, fig. 11, abstract and col. 15, line 39-62).

Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use an arbiter such as the one of Chao in the system of McKeown in order to reduce the traffic congestion of requests outputting into the network.

Regarding claim 24, McKeown discloses a fabric request controller for metering data flow to a switch fabric, the fabric request controller comprising:

means for generating a request corresponding to data cells that are to be transmitted to the switch fabric (col. 13, lines18-21);

means for receiving grant messages indicating that the data cells can be transmitted to the switch fabric (col. 13, lines 43-47),

a fake request generation means for periodically generating a fake request to one or more destinations on the switch fabric (col. 15, lines 18-24).

McKeown differs from the claimed invention in that he does not disclose a real request and a fake request generated in the form of a real request vector and a fake request vector, respectively, and an arbitration means for combining the request vector and the fake request vector and transmitting the combined request to the switch fabric.

However, Angle, in the same field of endeavor, teaches transmitted requests sent to a switch fabric in the form of request vectors (fig. 1-2 and p. 4, par. 0047).

Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use the request vectors form such as the ones of Angle in the request controller of McKeown for the real and fake requests in order to identify which of the possible destinations each request should be routed.

Moreover, Chao teaches an arbiter (AR-q 1, fig. 11) combining the requests (arrow inputs of AR-q 1 on left) and transmitting the combined requests (Rg, fig. 11, abstract and col. 15, line 39-62).

Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use an arbiter such as the one of Chao in the system of McKeown in order to reduce the traffic congestion of requests outputting into the network.

Regarding claim 27, McKeown discloses a credit counter for metering the generation of the requests (col.14. lines 13-16), but fails to teach about the generation of the request vectors.

However, Angle, in the same field of endeavor, teaches transmitted requests sent to a switch fabric in the form of request vectors (fig. 1-2 and p. 4, par. 0047).

Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use the request vectors form such as the ones of Angle with the credit counter in the request controller of McKeown in order to keep track of the generation of the requests and the possible destinations each request should be routed.

Regarding claim 26, McKeown discloses a user programmable register for storing a user programmable value that determines an interval of the periodic generation of the fake request (col. 18-24, the fact that a control cell is sent out periodically obviously shows that there must be a programmable register for storing an interval or period of generation of the request (control) cell), but fails to teach the generation of the request is in the vector form.

However, Angle, in the same field of endeavor, teaches transmitted requests sent to a switch fabric in the form of request vectors (fig. 1-2 and p. 4, par. 0047).

Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use the request vectors form such as the ones of Angle in the request controller of McKeown in order to keep track of the possible destinations each request should be routed.

8. Claims 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over McKeown et al. (US Patent No. 6,647,019) in view of Angle et al. (US Patent No. 6,477,169) and Chao (6,487,213), and in further view of Sindhu et al. (US Patent No. 6,807,594).

Regarding claim 25, the combination of McKeown and Angle disclose a fake request generation means, but fails to teach a pointer for storing a destination of the fake request vector, the pointer being periodically incremented.

However, Sindhu teaches a pointer for storing a destination of the fake request vector (col. 7, lines 11-14), the pointer being periodically incremented (col. 7, lines 22-25).

Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use the a pointer such as the one of Sindhu in the modified request controller of McKeown and Angle in order to provide a means for storing the destination address of the fake request vector and for minimizing the effects of the request vectors being lost during request transmission to the desired destination.

Allowable Subject Matter

9. Claims 3, 4, 15 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 3 and 15, the prior art of record fails to teach specifically the fake request circuit further comprises: a programmable register for storing a user programmable value, a timing counter, a comparator connected to the programmable register and the timing counter, the comparator generating a signal based on the timing counter and the user programmable value stored in the programmable register, the signal clearing the timing counter, a pointer register configured to store destination information; and a fake request vector containing request information based on the value stored by the pointer register.

Regarding claims 4 and 16, the prior art of record fails to teach specifically the fake request circuit further comprises: a vector setting circuit that, in response to the signal, modifies the fake request vector based on the value stored in the pointer register and increments the value stored in the pointer register.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Buchholz et al. (US Patent No. 5,493,569) is cited to show a method and apparatus for reducing the likelihood of contention and resource misallocation in a packet transmission system.

Golla et al. (US Pub. No. 2002/0176431) is cited to show a multiserver scheduling system and a method for a fast switching element.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tran Q. Le whose telephone number is (571)272-2046. The examiner can normally be reached on 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TQL

HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600